

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-15. (canceled)

16. (new) A process for extracting transforming growth factor β (TGF- β) and insulin-like growth factor 1 (IGF-1) from a milk product, comprising the steps of

a) recovering a basic fraction from the milk product by cationic exchange chromatography;

b) passing the fraction obtained in step a) over a hydroxyapatite column;

c) eluting the hydroxyapatite column sequentially with at least two eluents of increasing salt concentration or pH, said eluents being selected from phosphate buffers, sodium chloride solutions and potassium chloride solutions, wherein the first eluent has a pH of 5.5 to 7 and a salt concentration of 0.05 to 0.2 M and the second eluent has a pH of 5.5 to 7 and a salt concentration of 0.2 to 0.3 M, to obtain two separate fractions:

i) a fraction comprising IGF-1, wherein the ratio IGF-1 to TGF- β is greater than 10:1;

ii) a fraction comprising TGF- β , wherein the ratio TGF- β to IGF-1 is greater than 5:1.

17. (new) The process according to claim 16, further comprising a step of

d) eluting the hydroxyapatite column with a third eluent having increased salt content or pH as compared to the first and second eluents used in step c), said third eluent being selected from the group consisting of phosphate buffers, sodium chloride solutions and potassium chloride solutions to obtain iii) a fraction comprising lactoperoxidase.

18. (new) The process according to claim 17, wherein the eluent for obtaining fraction iii) has a pH of 5.5 to 8 and a salt concentration of 0.3 to 0.5 M.

19. (new) The process according to claim 16, wherein said eluents are phosphate buffers.

20. (new) The process according to claim 16, wherein step a) is carried out by passing the milk product at a surface velocity of more than 500 cm per hour and a liquid load of 100-600 bed volumes per hour through a column packed with the cationic exchange resin having a mean particle size of 100-300 μm .

21. (new) The process according to claim 16, wherein the milk product is any mammalian milk.

22. (new) The process according to claim 21, wherein the milk product is cheese whey.

23. (new) The process according to claim 21, wherein the fat has been removed from the mammalian milk.

24. (new) The process according to claim 16, wherein the basic fraction is obtained by treating the milk product to remove fat, passing the treated milk product over a column of cationic exchange resin, and eluting said basic fraction with a salt solution buffered at a pH between 5.5-8.

25. (new) A process for extracting transforming growth factor β (TGF- β) and insulin-like growth factor 1 (IGF-1) from a milk product, comprising the steps of

a) passing the milk product over a column with cationic exchange resin, and eluting the cationic exchange resin column with a salt solution at a concentration of a 0.3-0.5 M and a pH between 5.5 and 7.5 and to recover a basic fraction from the milk product;

b) passing the basic fraction obtained in step a) over a hydroxyapatite column;

c) eluting the hydroxyapatite column sequentially with at least two eluents of increasing salt concentration or pH, said eluents being selected from phosphate buffers, sodium chloride solutions and potassium chloride solutions, wherein the first eluent has a pH of 5.5 to 7 and a salt concentration of 0.05 to 0.2 M and the second eluent has a pH of 5.5 to 7 and a salt concentration of 0.2 to 0.3 M, to obtain two separate fractions:

i) a fraction comprising IGF-1, wherein the ratio IGF-1 to TGF- β is greater than 10:1;

ii) a fraction comprising TGF- β , wherein the ratio TGF- β to IGF-1 is greater than 5:1.

26. (new) The process according to claim 25, further comprising a step of eluting the hydroxyapatite with a third eluent selected from the group consisting of phosphate buffers, sodium chloride solutions and potassium chloride solutions to obtain a fraction comprising lactoperoxidase.

27. (new) The process according to claim 25, wherein said eluents are phosphate buffers.

28. (new) The process according to claim 25, wherein step a) is carried out by passing the milk product at a surface velocity of more than 500 cm per hour and a liquid load of 100-600 bed volumes per hour through a column packed with the cationic exchange resin having a mean particle size of 100-300 μm .

29. (new) The process according to claim 25, wherein the milk product is any mammalian milk.

30. (new) The process according to claim 29, wherein the milk product is cheese whey.

31. (new) The process according to claim 25, wherein the milk product is treated to remove fat prior to step a).

32. (new) The process according to claim 29, wherein the fat has been removed from the mammalian milk.

33. (new) A process for extracting transforming growth factor β (TGF- β) and insulin-like growth factor 1 (IGF-1) from a milk product, comprising the steps of

a) passing the milk product at a surface velocity of more than 500 cm per hour and a liquid load of 100-600 bed volumes per hour through a column packed with the cationic exchange resin having a mean particle size of 100-300 μm and eluting the cationic exchange resin column with a solution to recover a basic fraction from the milk product;

b) passing the basic fraction obtained in step a) over a hydroxyapatite column;

c) eluting the hydroxyapatite column sequentially with at least two eluents of increasing salt concentration or pH, said eluents being selected from phosphate buffers, sodium chloride solutions and potassium chloride solutions, wherein the first eluent has a pH of 5.5 to 7 and a salt concentration of 0.05 to 0.2 M and the second eluent has a pH of 5.5 to 7 and a salt concentration of 0.2 to 0.3 M, to obtain two separate fractions:

i) a fraction comprising IGF-1, wherein the ratio IGF-1 to TGF- β is greater than 10:1;

ii) a fraction comprising TGF- β , wherein the ratio TGF- β to IGF-1 is greater than 5:1.

34. (new) The process according to claim 18, wherein the milk product is any mammalian milk.

35. (new) The process according to claim 34, further comprising a step of

d) eluting the hydroxyapatite column with a third eluent having increased salt content or pH as compared to the first and second eluents used in step c), said third eluent being selected from the group consisting of phosphate buffers, sodium chloride solutions and potassium chloride solutions to obtain
iii) a fraction comprising lactoperoxidase.